Life-threatening Postpartum Hemorrhage Successfully Treated with a Colorectal Double Balloon

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A 28-year-old woman, gravida 1, para 1, was referred to our hospital because of massive postpartum hemorrhage occurring immediately after a normal vaginal delivery at a local hospital, with estimated blood loss of more than 1,500 mL. In the emergency room, the patient was still actively bleeding from the cervix and vaginal laceration wound. Laboratory results were as follows: hemoglobin 7.4 g/dL, fibrinogen 168 mg/dL (reference range, 200–400 mg/dL), and D-dimer 614 ng/mL (reference range, < 500 ng/mL). She received a total of eight units of packed red blood cells and 24 units of fresh frozen plasma. Administration of intravenous oxytocin, intravenous prostaglandin E1 and intramuscular ergonovine maleate did not stop the bleeding. An emergency hysterectomy and bilateral ligation of internal iliac arteries were performed. The posterior vaginal laceration, 2 cm in length and 2 cm distal to the vaginal cuff, was still actively bleeding. Catgut sutures were applied to the laceration but did not work well because of the fragile vaginal tissues and difficulty in clearly identifying the active bleeding points.

After a failed rolling gauge compression, we then placed a colorectal double-balloon tube (Rusch; Teleflex Medical, Germany) into the vagina, inflating the balloon with 300 mL of air. Broad-spectrum antibiotics were prescribed to prevent infection. Fortunately, the bleeding ceased gradually under compression of the inflated balloon. The colorectal double-balloon tube was removed 48 hours later and no more active bleeding was found. The patient was discharged 1 week later and the vaginal laceration healed well without scarring.

Pelage et al [1] reported on 35 patients with unanticipated postpartum hemorrhage who underwent selective arterial embolization of the uterine arteries. Bleeding was controlled in all patients but one. In the case reported here, hysterectomy and bilateral ligation of the internal iliac arteries were performed because of uterine atony with refractory bleeding leading to potential shock. Blood supply to the vagina is mainly from branches of the uterine arteries and the vaginal arteries, which originate from the internal iliac arteries. Surprisingly, the vaginal bleeding did not stop even though the abdominal computed tomography confirmed collapsed bilateral internal iliac arteries following ligation. Collins and Jackson [2] reported a case of pelvic arterial embolization following hysterectomy and bilateral internal iliac artery ligation for intractable primary postpartum hemorrhage. They discovered that the pubic or obturator branches arising from the proximal inferior epigastric artery are potential collateral vessels. This may explain why the vaginal bleeding did not cease even after bilateral ligation of the internal iliac arteries. Superselective transarterial embolization of distal targeted bleeding vessels may be an alternative way to control such bleeding.

The effectiveness of the tamponade setting as a conservative procedure for postpartum uterine hemorrhage has been well established [3–5]. The colorectal double-balloon tube is 12 inches in length and 0.4 inches in diameter, with balloons being expanded over 2 inches in diameter with a capacity of 300 mL. This special tube is designed for patients who are unable to hold their enema solution for an adequate time. Anatomically, the length of vagina is longer than the uterus. A single tamponade is enough for uterine packing but may not be enough for vaginal packing. Tattersall and Braithwaite [6] used two separate Bakri tamponade balloons (Cook Ireland Ltd, Limerick, Ireland) to successfully control severe postpartum hemorrhage due to vaginal laceration. Instead of two separate balloons, we used only one colorectal double balloon to fill the whole vaginal capacity. The use of one colorectal double balloon is easier in practice than the use of two separate balloons. To our knowledge, this is the first report regarding the

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use of a colorectal double-balloon tube to manage postpartum hemorrhage resulting from a deep vaginal laceration. On the basis of this report, compression by a double-balloon rectal tube inflated with air ought to be regarded as another option, in addition to surgical repair, gauge packing, arterial embolization or ligation.

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